

# *out of touch*



**STEEL FINGERS**

HV 1950  
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ISSUED BY THE DEVELOPMENT WORKSHOPS COMMITTEE OF ST. DUNSTAN'S



ST. DUNSTAN'S, LONDON

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# OUT OF TOUCH

*A story of the work of  
ST. DUNSTAN'S  
Research Department  
in devising aids for Men and Women  
who have been blinded and additionally  
disabled on war service.*

*Edited and compiled by J. E. ROSE*

# *the story*

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*This brochure tells the story of one of the most remarkable activities of St. Dunstan's—its Research Department. It reveals in an interesting and descriptive form, especially photographically, many of the devices which have emerged from this Back Room of St. Dunstan's to assist those who have lost hands as well as their sight.*

*Sir Ian Fraser, Chairman of St. Dunstan's, in his annual report for 1948 writes:—“St. Dunstan's success is not to be measured by the number of outstanding men among its members, though there are many, but by the way in which it has given the ordinary man and woman the best opportunity to rebuild a shattered life, that experience and resource could suggest.”*

*World War I presented St. Dunstan's with many problems in methods of treatment and training of blinded and disabled men, but World War II immeasurably increased the range and intricate nature of those problems, due largely to the much higher proportion of those who had lost both hands, or one hand, in addition to being blinded.*

*In 1943, when the doubly handicapped were coming in increasing numbers, a young engineer—Mr. Peter B. Nye—was appointed in charge of research. He entered upon his humane task with zest and enthusiasm for, after consulting Sergeant Alan Nicholls, and one or two others who had lost their hands in the first war, he attached himself for a whole week to one of the newly blinded amputees, acting as valet-companion, in order, by direct observation, to obtain ideas as to the nature of gadgets which might be usefully devised.*

# *how it all began*

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*A one-man research department was soon expanded by the appointment of further engineers until to-day its personnel includes six experienced technicians. In addition, a Development Workshops Committee was formed under the Chairmanship of Air Commodore G. B. Dacre, who for four years after his retirement from the R.A.F. was Commandant at St. Dunstan's Training Centre.*

*Needless to say, there have been some failures in the experiments evolved, but these have been more than compensated for by the hundreds of successes.*

*How successful has been the work of the department can be judged from the pages that follow. Whatever the expense involved, or however fantastic the original idea might have seemed, no effort has been spared if it has contributed in some small way to the further independence of those gravely handicapped men and women. Their happiness has been the reward.*

*This brochure shows how the devices have made it possible for the doubly handicapped to take up useful and effective vocations and to approach a more normal life by relieving them of a large measure of dependence upon others. Perhaps most important of all—their general morale, their very outlook towards life itself has undergone a marked change, and a life full of great new possibilities for the future has been opened up to them.*

*They are no longer "OUT OF TOUCH."*

J. E. R.

# *timepieces for the handless*

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The problem of "Time-lag" is met by St. Dunstan's, in so far as the blinded men and women are concerned, by presenting each with a braille watch at the earliest moment after blindness has occurred.

For the doubly handicapped man, however, a new position arose. Could the repeater watch, in some way, be adapted for the use of the blind-handless man?

The Engineers' Department tackled the task of discovering the potentialities of the idea, and experiments, extending over many weeks, resulted in the "plunger" pattern being adopted. By pressing a plunger the wearer is able to hear the chimes.

The experiment was carried further to aid the deaf as well as the blind-handless, by removing the bells so that the hammers beat on the watch case and transmitted the vibrations of the ringing code to the body.

In each instance the watch is so shaped as to fit comfortably into the breast pocket without unnecessary movement and to remain in the same position when operated. The total weight of the complete adapted watch is approximately 7 ozs. Cut out of a solid piece of light metal approximately 3in. by 3in. by  $\frac{3}{8}$ in., the watch

housing has a retaining plate screwed on to the back to hold the watch in position. The inside of the housing is hollowed out partly to reduce the weight and partly to reverberate the sound of the chimes. The operating plunger is made of ebonite and is shaped like a fountain pen top so as not to look conspicuous in the pocket. The spindle is connected to an extension piece brazed to the repeater slide by means of a light tension spring. This takes any shock and safeguards the repeating mechanism against damage should too much pressure be applied to the plunger.

Whilst the pocket-type watch meets the needs of the doubly handicapped man, the woman similarly handicapped, but who is not blessed with pockets presented a separate problem. This has been partially solved with the repeater mantelpiece clock for the home. The clock is about the size of the ordinary alarm clock and the whole is encased in an attractive chromium frame which also forms a pleasing adornment in the room.

The chimes are operated by a plunger, similar in principle to the pocket watch, which is mounted on the top of the clock and is surmounted by a large metal button which is pressed with the stump of the arm.



REPEATER POCKET WATCH AND MANTELPIECE CLOCK

# *typewriting*

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Every blinded man, or woman, who comes to St. Dunstan's is at some time or other taught to typewrite. Those with hands unimpaired or very little damaged, quickly become expert and remarkably accurate touch-typists. But what is the outlook of the blinded man who is without hands? He, too, is animated with the desire to acquire some means of correspondence with his friends. The typewriter, as a practical medium, became the answer to the problem. Research developed along this theory with the result that to-day men and women so handicapped have a typewriter they can use. That this was the right advance to a solution has been exemplified by the fact that several of the men have become uncannily efficient as typists. One who is blind and has lost the use of his hands spends hours a day typing reports in connection with his job as proof-reader in the Talking Book Department. Typing cross-word puzzles and their clues affords him much pleasure, and indeed, a small income.

And what is the solution? It consists of a metal plate fashioned in a series of terraces, or steps, and superimposed over the keyboard of a standard portable typewriter. Each terrace has a number of shallow gutters, or grooves, with a  $\frac{1}{4}$  in. hole in the centre of each, positioned immediately over each key. The user has an "L"-shaped striker, or "bent finger," fitted to his artificial arm. To locate the desired letter he first feels for the correct terrace, then sliding his metal "finger" across the gutters, counting them until he comes to the required letter. He then inserts the "finger" through the hole in the gutter and thus contacts the letter beneath. Practice enables him to work with the "finger" of either hand and to attain a reasonable speed. It demands patience and acute concentration, but these are characteristics of the blinded people.

It is interesting to record that the senior instructor at St. Dunstan's on this special typewriter for the blind-handless is a blinded veteran of the 1914-1918 war.



BLIND-HANLESS MAN, UNDER INSTRUCTION, TYPING A LETTER HOME

(Inset) PORTABLE TYPEWRITER SHOWING ADAPTED KEYBOARD

# *weaving*

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There are few departments at St. Dunstan's Training Centre, at Ovingdean, which attract the attention and interest of the visitor more than the weaving shop. One may interpolate, too, that in few departments has a greater advance been made in developing aids for the blinded-handless men and women to do practical work.

Weaving in its early stages at St. Dunstan's was classified as a hobby, as something designed to occupy the mind and time of the blinded and doubly handicapped persons. But experience has shown that though essentially a "home" craft, weaving can be made a full-time occupation containing economic and commercial opportunities.

One St. Dunstaner, living in Brighton, has had installed in his house a specially constructed 54in. loom and is under contract for the supply of woven teacloths, dusters, etc., to local clients.

The experiments of the Engineering Department reached a practical stage in 1946, when a loom was constructed for a blind-handless man. Eleven such looms have now been installed and four doubly handicapped men are on full-time occupation as weavers whilst others have taken it up as a spare-time occupation.

An Australian ex-Service man, similarly handicapped, came to St. Dunstan's in 1948.

He has now returned to his country with a loom specially adapted for his use and latest production reports indicate a most optimistic and successful future for him.

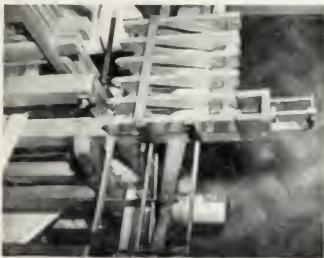
The general design of the loom used by the handless St. Dunstaner is based on the ordinary weaving machine. But the operation of the heddles and beater is by the feet. The shuttle firing is by means of a spring-loaded plunger operated by a lever which the man moves with the stump of his arm. When the shuttle is fired from one side, the plunger on the opposite side is automatically cocked. Each loom has two magazines containing bobbins and when one shuttle has exhausted its supply of twill a bell rings and a new one comes into position by the operation of a vertical lever which is effected by the stump.

Once the loom has been set up (threaded with twill) it can be operated by the handless man with very little attention from a sighted person until he has completed about 60 yards of cloth.

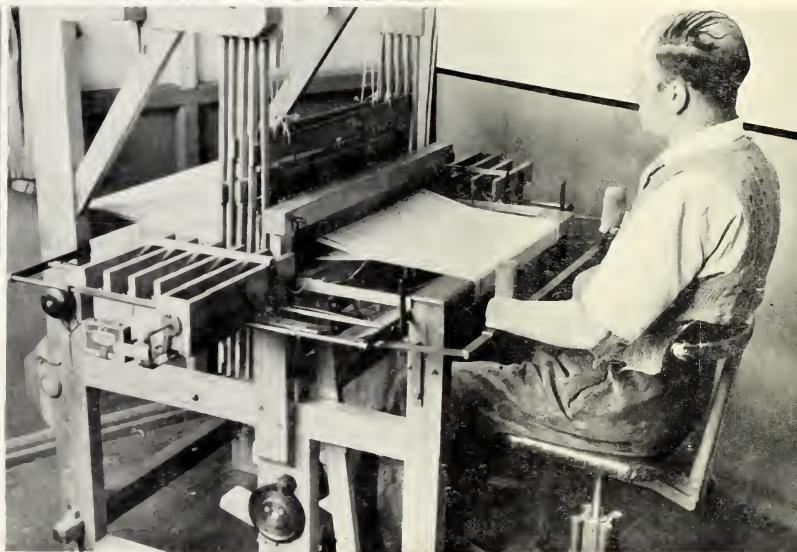
St. Dunstan's engineers have undoubtedly designed and adapted machines which have created great opportunities for the doubly handicapped men and women.



ARTHUR BALDWIN, IN HIS HOME AT BRIGHTON, WEAVING TABLECLOTHS



SECTIONAL PICTURE SHOWS SHUTTLE FEEDING MECHANISM



ON THE RIGHT ARTHUR CAVANAGH, WHO IS EMPLOYED AT THE REMPLOY FACTORY AT SALFORD MANCHESTER, WEAVING TEACLOTHS

# *shopkeeping*

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Can a blind-handless man make a successful shopkeeper? A man who has lost his sight can certainly succeed, for he is able to handle money and once he has learnt the lay-out of his shop, is able to satisfy the needs of his customer. To-day, over 150 St. Dunstaners are gainfully employed as shopkeepers. These include several men who are blind and whose hands and fingers are so badly damaged that they are regarded as handless.

St. Dunstan's engineers have produced a number of devices which enable the blind-handless men to become shopkeepers.

Three machines especially have been designed to help them. They are:—

- (1) The coin identification machine.
- (2) Change giving machine.
- (3) Cigarette cabinet.

The coin identification machine is a rectangular, glass-fronted box with a chromium top plate, and has a swivelling partitioned tray inside. Two specially-shaped guides are fitted to the top plate. These are positioned in such a way that any particular coin passing between them cannot go beyond a given position. There are nine positions, one for each of the English coins. The customer places his money on the top

plate and the disabled shopkeeper slides each coin between the guides with his stump of the finger until it comes to a stop. A buzzer is sounded as the coin passes each position and the coin is identified by the number of buzzes that are heard. The shopkeeper then presses a lever and the coin is tipped through a slot into the tray inside the machine but is still visible by the customer through the glass front. Another lever is pressed which tips the tray backwards and all the coins are slid and stacked into a coin rack.

The change-giving machine is a standard automatic cashier as used by the railways, adapted for the needs of the blind-handless.

The cigarette cabinet is a machine similar in construction to the ordinary type of cigarette slot machine. The drawers are specially designed so that the disabled shopkeeper can open them and remove a packet of cigarettes. The cabinet has a capacity of taking fifty packets each of eleven different brands of cigarettes and there is also a compartment for matches.

Once the cigarette cabinet is filled, and the change-giving machine stacked with coins, our blind-handless shopkeeper is able to handle the cigarette side of the business unassisted for three or four hours.



SOME OF THE MECHANICAL AIDS USED BY  
ST DUNSTANERS IN THEIR DAILY BUSINESS AS SHOPKEEPERS

# *telephones for handless men*

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A most valuable accessory to modern life, whether in business or in the home, is the telephone. We have developed the telephone sense. The blind-handless man need not suffer because of his handicap, for the Engineers' Department have devised a form of telephone which enables him to be fully independent in the use of the instrument. It is an ingenious device.

The outfit consists of a foot pedal unit, containing two pedals, which is placed on the floor beneath the table or desk. On the table stands an adjustable chromium mounting to which is fixed an ordinary hand microphone set. Inside the base of the mounting is a telephone dial mechanism which is operated mechanically by a plunger fixed vertically to the base.

To receive a call the blinded-handless person presses the left hand pedal and by placing the ear to the fixed microphone, engages in conversation. The talk completed, he presses the right hand pedal which releases the call.

To make calls he presses the left hand pedal, waits for the dialling tone, and then presses the plunger with the stump of his arm which automatically dials "O," and thereby calls the attention of the telephone exchange operator. This type of instrument has been found most

convenient in the home as it is not necessary to wear an artificial arm.

But the engineers have carried the device further to enable the disabled man to make his own calls without the aid of the exchange operator. This is done by using a mechanical keysender, to which is adapted a special guide plate. He is thus able to select and dial his number on the ten keys. The operation entails the use of a metal "finger" with which he depresses the levers, or keys, in the keysender.

Other adaptations have been made to telephones for special cases. One St. Dunstaner has a very short stump of the thumb which enables him to secure some grip on the microphone set but not to dial his calls. For him a special large dial has been made and by this he is able to obtain his own numbers with the brief stump of his thumb.

Another St. Dunstaner who may have a badly damaged hand would be unable to use the standard telephone dial in its normal position without kneeling on the floor. To overcome this the dial of the telephone has been built up to an horizontal position which enables him to use it without kneeling and a shroud has been fitted around the dial which eliminates the finger slipping difficulty he previously experienced.



A FEW OF THE DIFFERENT TELEPHONE SYSTEMS  
DEvised FOR THE USE OF HANDLESS ST. DUNSTANERS

# *handless telephone switchboard*

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Telephony has been one of the most successful of full-time occupations and sources of gainful employment for the blinded man since the 1914-18 war. To-day, nearly 150 St. Dunstan's trained men and women are earning their living as telephone switchboard operators.

In 1943 it occurred to Sir Ian Fraser that this vocation might be possible for the blind-handless man. The idea was primarily explored by the G.P.O. and it was found there was no telephone system in existence that was suitable to be operated by one so handicapped.

Many experiments were tried out and it was found possible to adapt one of the automatic G.P.O. systems if it were supplemented by a specially constructed switchboard and pedal platform and introduced into the automatic system via special relay equipment.

Patience and industry were applied to this objective and it took nearly  $2\frac{1}{2}$  years before a

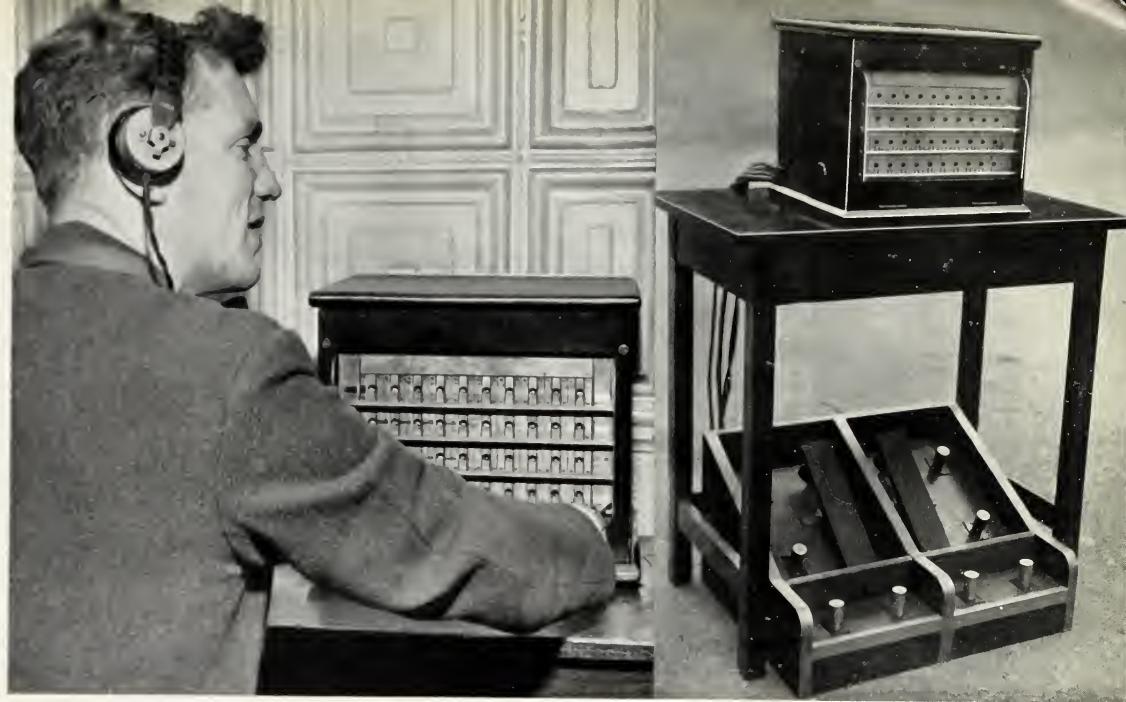
system was developed by Mr. P. B. Nye, Chief Engineer of St. Dunstan's, and Mr. J. H. Combridge, an Executive Engineer of the G.P.O., to a stage suitable for the purpose.

The apparatus designed for the blind-handless man consists of a pedal platform and a cabinet containing 40 push buttons, which are covered by metal contact guide plates (as illustrated).

The operator makes, receives and extends his calls by operating the push buttons with a metal striker which is fitted into the artificial arm and by the combined use of the foot pedals.

He is able successfully to handle a board with the capacity of 10 Exchange lines and 50 extensions.

This system is installed at St. Dunstan's Research Department, where Tommy Gaygan, blinded and handless, independently operates the whole departmental service.



TOMMY MAYGAN OPERATING THE TELEPHONE SWITCHBOARD AT ST. DUNSTAN'S  
THE PICTURE ON THE RIGHT SHOWS ATTENDANT'S CABINET AND PEDAL PLATFORM

# *talking book for handless*

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The Talking Book is a most treasured companion of the blind. It is jointly controlled by the National Institute for the Blind and St. Dunstan's. Its object is to supply reading matter without the necessity of being able to read braille, which is difficult for some and impossible for the handless. The Talking Book consists of recordings of books on special gramophone records, each side of which has a playing time of 23 minutes.

The special reproducing machine is fitted with a light-weight pick-up and a long-playing stylus. When a book is reproduced for Talking Books, the records are sent to the Central Library in London and are then circulated by post, at a special postage rate, to all parts of the country.

But the handless man is at a great disadvantage, for he is unable to handle the records or operate the controls.

St. Dunstan's Research Department has come to his aid by designing a special combined Talking Book and gramophone reproducer. Every blind-handless man and woman who is a member of St. Dunstan's has one of these machines in his or her home. The machine is encased in a handsome polished cabinet into which is fitted two automatic record changers, one of which is specially adapted for playing Talking Book records and the other for ordinary commercial records.

After the units have been loaded with eight records, the disabled person is independent of further help by being able to use three foot pedals which switch on the amplifier and operate the changer units. There are also three special knobs on the side of the cabinet which control the volume, the tone and the speed. These are operated by the stump of the forearm.

The records of the Talking Book run at a speed of 24 r.p.m., compared with 78 r.p.m. of commercial records.



COMBINED AUTOMATIC TALKING BOOK AND GRAMOPHONE FOR THE BLIND-HANLESS

# *the housewife*

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Mrs. Winifred ("Winnie") Edwards, before being blinded and losing both her hands as the result of an explosion, was an active housewife. Though doubly handicapped she is not content to live idly or remain dependent upon others. St. Dunstan's engineers have helped her magnificently to overcome her handicaps and achieve her objective of usefulness.

Mr. and Mrs. Edwards and their family live in an industrial Midland town, where Mr. Edwards carries on a private car-hire business. Mrs. Edwards, after her injuries, entered St. Dunstan's Training Centre to receive what help it was possible to offer her as a doubly handicapped person. She was one of the earlier instances of the blinded-handless women and St. Dunstan's then had had little experience in devising aids for such cases.

The Engineers' Department assiduously set themselves to the task of devising some means of helping those so handicapped. They explored suggestions and experimented with a number of gadgets which would enable the housewife to take some share at least in the daily operations of running a house, and also, if possible, as in the

case of Mrs. Edwards, to assist her husband in his work.

To-day she is doing both of these things. Among her achievements, with the help of St. Dunstan's inventions, she "vacuums" her carpets and, by means of a specially designed telephone, is able to receive and transmit messages whilst her husband is driving his car. She uses the telephone with the effectiveness of an ordinary person. Times are correctly noted by the mantelpiece repeater clock, which has been specially designed for her. Even in her moments of relaxation when the Talking Book or the radio is required, she is independent of others' assistance, thanks to St. Dunstan's gadgets.

Her use of the vacuum cleaner is rendered possible by the attachment of specially adapted leather lined brackets to the cleaner tube, into which the stump of the forearm can be inserted, which enables her to carry out the normal movements over the carpet with freedom and comfort.

Other gadgets which contribute to the comfort and independence in the home include special car-type handles to doors, lever-type water taps, gauntlet fitting sponges and fixed soap bowls for washing—to mention only a few.



MRS EDWARDS IN VARIOUS OCCUPATIONS IN HER HOME

# *“braille writer”*

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Braille writing is essential to a blind man's usefulness. He aspires to attain the greatest efficiency in this as a ready means of communication with his similarly handicapped friends and also to enjoy the amenities of the braille library.

To those blinded who may adopt an academic or professional career, the shorthand typist, the telephone switchboard operator and similar occupations, the facility to write braille speedily is a material factor.

St. Dunstan's engineers have devoted much time and thought to improving the apparatus employed in writing braille—and with no small degree of success—the culminating effort being the “St. Dunstan's Braille Writer.”

The conventional English model of braille writer, which writes downwards, though regarded satisfactory in many blind circles, has its disadvantages. This is especially so for those blinded in later years, who find it impossible to check work without removing the paper from the machine.

The St. Dunstan's machine being an upward writer, dispenses with this and enables the blinded, or the sighted braillist to commit his work easily and quickly to paper of any size or shape, within the limits of the roller.

The principle of dots in their various combinations to form the letters is maintained.

They are transmitted to paper by a machine resembling the ordinary typewriter. But whereas in most models the paper is held rigidly on a plate and the key unit moves across it, in the latest St. Dunstan's model the key unit is stationary and the paper on the roller moves along at each operation of the key. The braillist is thus able to check what characters have been written immediately after they have passed the embossing hand, without removing the paper.

A further advantage, especially to the blinded telephone switchboard operator, or one making notes from the telephone, is that the keys of the “writer” are so positioned as to facilitate writing with one hand, leaving the other free to hold the telephone receiver.

To the shorthand typist, the “writer” is a boon when taking dictation and considerably enhances the person's value in any commercial or office establishment.

The whole apparatus is portable, being about the same weight as an ordinary portable typewriter.

The “Writer” is another product of St. Dunstan's Engineering Department, which has thus advanced the scope and opportunity, as well as advanced the usefulness, of the blinded braille writer or reader.



ST. DUNSTAN'S BRAILLE WRITER, ADAPTED  
AND BEING OPERATED BY SINGLE-HANDED TRAINEE  
STANDARD MARK II MACHINE ON RIGHT



# *rifle range*

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Blind men, owing to their disability, do not normally participate in sport such as cricket, tennis and golf, etc.; anything, however, where blind men as a team could challenge not only other blind teams but sighted teams, would be most welcomed. Many things were suggested and tried, but without success, until in 1946 Air Commodore Dacre conceived the idea of shooting by hearing.

This idea at first seemed impossible, but the Research Department tackled the job with their usual enthusiasm. Mr. P. B. Nye worked on an idea and within a year a Blind Miniature Rifle Range complete with aural aiming rifle was installed at the Training Centre.

The rifle is a .22 service pattern B.S.A. and is mounted at its point of balance on to a swivel stand which is fixed to the floor at the firing point of a fifteen-yard single target range. The maximum protection is afforded by the fact that it is impossible to fire the rifle outside the bullet trap area, which is 5ft. square.

Surrounding the barrel of the rifle, slightly behind the foresight, is a screened circular metal ring of  $2\frac{1}{2}$ in. diameter; this ring and the rifle barrel are wired into a twin beat frequency

oscillator and when the position of the barrel is moved relative to the screened ring, the tuning of the oscillator is varied. When the barrel is in the centre of the ring, it is in line with the bulls-eye and the oscillator is tuned to zero so that there is no sound. As the rifle barrel is moved away from this central position, an oscillation is heard which rises in tone the further the barrel is moved from the centre. The sound is conveyed to the rifleman either by headphones or loudspeaker.

All the pleasures which are usually derived from shooting are enjoyed by the blind rifleman; the same concentration, muscular control and steady nerve are still important factors in being able to shoot accurately, but whereas it is normally necessary to have accurate sight to become a marksman, the blind rifleman has to have accurate hearing.

The rifle range is one of the most popular pastimes at the Training Centre to-day and competitions are frequently held with local rifle clubs. No further proof of the popularity of this sport is necessary than the fact that in eighteen months no fewer than twenty thousand rounds of ammunition have been fired.



"SHOOTING BY HEARING"  
OSCILLATOR AND TUNING PANEL  
IN CENTRE OF PICTURE

# *other devices*

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## LIFT OPERATOR

"Fifth floor—Canteen, Braille and Typing Room." This was the announcement of a Lift Operator at St. Dunstan's Training Centre at Ovingdean, made one day as the elevator proceeded upwards. He was handless as well as being blind, but he worked the machine with complete confidence.

This was yet another instance of ingenuity originating in the Engineers' Department, which enabled a doubly handicapped man to undertake the vocation of lift operator.

This is made possible by a combined call and switch system as shown in the photograph. The switch buttons have been made to the dimensions and spacing that they can easily be selected and pressed with the stump of a handless man. When the call button is pressed at any floor, a buzzer is sounded in the lift and the corresponding switch button on the operating panel is automatically ejected an inch. The operator, by drawing the stump of his forearm across the surface of the buttons, finds the ejected one which he presses in and the lift automatically moves to the required floor. On releasing the button it returns to its original position. Special quick-

release handles have been fitted to the lift doors to make it possible for them to be opened and closed with the stump of the forearm. There is also a push-button fixed below the hand-rail in the lift which enables the operator to sound the alarm in case of emergency.

## BRAILLE METERS

The devices which have originated in the St. Dunstan's Engineering Department seem to have no limit in number or in character. A blinded ex-Service man who was a maintenance electrician before the war was extremely anxious to be able to carry on his job after he was blinded.

St. Dunstan's engineers found that the electrician concerned was able to do practically everything with the aid of specially designed tools which St. Dunstan's made for him.

These include a special set of electrical test meters which have been designed for use under blind conditions, calibrated with braille characters.

The apparatus consists of a volt meter, an ammeter and a megohm meter. Whilst the electrician is not able to travel round the works to make repairs on the spot, the equipment needing attention is brought to the

maintenance shop and here he makes the necessary repairs and places the apparatus on test, which incorporates the use of the special meters.

## CIGARETTE BOX AND LIGHTER

The St. Dunstaner enjoys his smoke. Normally, the handless man would need the services of a friend, or attendant, every time he required a cigarette to be put in his lips and lighted. The advent of the Cigarette Box and Lighter became a most welcome innovation and a time economiser of considerable value.

The machine has capacity for 25 cigarettes. Externally, it is an oblong box about nine inches by four. By pressing a plunger a cigarette is shot into a vertical position through a slot at the end of the box. The operation automatically switches on a lighting element. The smoker then takes the projecting cigarette in his lips, gives a couple of deep "draws" which ignites his smoke, and then withdraws the cigarette from the box.

On releasing the plunger another cigarette is fed into position all ready for the next smoke.

The "power" is obtained from two batteries which are housed in the base of the machine, and this gives energy to both the element and buzzer.



HANLESS LIFT OPERATOR AT HIS JOB  
BRAILLE ELECTRICAL TEST METER SET  
HANLESS MAN GETTING HIS OWN CIGARETTE



# *recreation*

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## HOUSEY HOUSEY

Housey Housey, or Lotto, has always been a popular game in the Forces, so it was not surprising that there should be a demand for the game at the Training Centre, where blinded ex-Servicemen often find difficulty in killing time in the evenings.

The Research Department has produced two games of Housey Housey for the blind, one for the Training Centre at Brighton and one for the St. Dunstan's Club in London. The game is similar in principle to that of the standard game, but the cards and discs used by the players are specially made so that a blind man can play with the same ease and speed as a sighted person. Instead of being thin pieces of cardboard, the cards are made of  $\frac{1}{4}$  inch thick bakelite and have  $\frac{3}{4}$  inch diameter recesses, at the bottom of which are brailled the numbers. The recesses are to prevent the white ivorine covering discs from being moved when the blind player slides his fingers over the card.

## THE CARD PLAYER

Of many indoor recreations, none affords greater pleasure to those of the blind world than a game of cards. St. Dunstan's Bridge Club have demonstrated that they can hold their own in competitive bridge playing with sighted teams.

Now, by devising the special card holder, the Engineers' Department have made it possible for the single-handed blind to participate in games.

The holder consists of a crescent-shaped frame which clips to the artificial arm, or the forearm stump. It contains thirteen spring clips for holding the cards, leaving the sound hand free to handle the cards, to insert them in the spring holder, and also to feel the braille characters on the left-hand top corner which indicates the suit and value of the card. The one-armed player is thus able to make the appropriate selection of his card and to play it.

A simple device, but one which affords an added pleasure to a highly disabled person.

## THE DOMINO PLAYER

The blind naturally enjoy any game that can possibly be made available to them. Until recent years, however, many of the activities in which the blind could participate were denied the handless, but St. Dunstan's Research Department have given them many additional aids to recreation.

A game of dominoes, for instance, a very popular pastime among St. Dunstaners, is possible to the blinded man by means of the raised dots on the pieces. The handless man, dispossessed

*continued on Page Twenty-eight*



FUN AND GAMES. SOME OF THE DEVICES WHICH ENABLE  
MEN OF VARYING DISABILITY TO ENJOY THEIR RECREATION  
THESE INCLUDE A SPECIAL PANEL FOR THE HANDLESS DOMINO PLAYER

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of the sense of touch, was previously unable to join in the game. This disadvantage has been rectified by the invention of the "Domino Player."

This device consists of a vertical contact plate, 12 inches square, which is clamped in an upright position to the table. Dominoes are inserted in a rack in the back of the plate and the player is able to identify the value of the piece by audible buzzing signals given by running a metal "finger" attached to the forearm along grooves, or shallow ruts, which run both vertically and horizontally across the face of the plate. These grooves divide the plate into segments, each of which represents a domino. By "scanning" the plate vertically and horizontally with the metal "finger" the player is able to discover the value and position of the individual pieces in the rack.

Having selected the domino he wishes to play, he runs his "finger" downwards and inserts it in one of the series of holes, which action releases the domino and causes it to fly out from its position in the rack on to the table.

The dominoes, whilst in every way similar to those used in the normal way by the blinded, have one dot in each number combination made of metal, which is spring-loaded so as to make the appropriate electrical connection to the contact plate.

Thus the blind-handless man is able to join in a game of "threes" or "fives" with blind, or sighted, comrades.

#### THE TROMBONE PLAYER

Like his less handicapped comrade, the handless blind often finds much enjoyment in music. But while all can be listeners, and some may have the vocalist's gift, participation as a performer on an instrument is inevitably limited because of the loss of fingers. The Research Department, by introducing several ingenious devices, have, for instance, made it possible for the handless man to play the trombone.

The instrument has been specially balanced for the comfort of the handless player and an adjustable attachment has been fixed to the frame which fits into the artificial arm, or gauntlet, of the left stump, giving the necessary support to the instrument. At the same time, an extended swivel attached to the right gauntlet enables him to slide the trombone to the several positions.

This specially adapted instrument undoubtedly requires much practice and patience, and it is to their considerable credit that several doubly handicapped men have developed a degree of proficiency on the trombone which has earned for them a place in the St. Dunstan's Band.

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P R I N T I N G



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